PONOMAREV, Ye.D.

Intensification of grain drying and the distribution of heat carriers in the boxes of shaft grain dryers. Sbor. rab. GOSNITI no.17;86-88 '62. (MIRA 17:9)

L 22243-66 EWT(m)/T

ACCESSION NR: AP6005421 SOURCE CODE: UR/0289/65/000/003/0057/0063

AUTHOR: Vol'khin, V. V.; Ponomarev, Ye. I.; L'vovich, B. I.; Kolesova, S. A.

ORG: Perm Polytechnic Institute (Permskiy politekhnicheskiy institut) 20 B

TITLE: The use of freezing for the coagulation of weak colloidal solutions and the granulation of inorganic sorbents

SOURCE: AN SSSR. Sibirskoye otdeleniye. Izvestiya. Seriya khimicheskikh nauk, no. 3, 1965, 57-63

TOPIC TAGS: inorganic chemistry, sorption, absorption coefficient, solution property, freezing, chemical precipitation

ABSTRACT: The authors investigated the possibility of the use of freezing during the precipitation of elements without a collector from weak solutions, as well as the effect of freezing on the density, filtering capacity, and the sorption properties of coagulants of inorganic substances. Some results of earlier work are presented together with new experimental data in order to provide an overall concept as to the possibilities of the freezing method. The procedure is described in detail. It is shown that by means of freezing and thawing it is possible to

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ACCESSION NR: AP6005421

separate metal ions as hydroxides from solutions with concentrations of precipitant up to 10^{-5} g·ion/liter, and to reduce their content in the solution to a considerable degree at concentrations up to 10^{-6} g·ion/liter. The freezing of the solutions also promotes a more complete separation of chemical compounds with appreciable solubility. The dehydration and the densification of inorganic precipitants by freezing does not lead to the desorption of radioactive isotopes previously absorbed by the inorganic precipitants from the solution. The sorption isotherms (for the initial coagulants) of frozen and thawed precipitants are identical and indicate that the values of the maximum sorption capacity of a substance are equal before and after freezing. The freezing and subsequent thawing make it possible to obtain coagulants of inorganic substances in granular form without substantially reducing their dynamic sorption capacity. The precipitates produced may be recommended for use as sorbents in column chromatography. Orig. art. has: 2 figures and 4 tables.

SUB CODE: 07 / SUBM DATE: none / ORIG REF: 019 / OTH REF: 009

Card 2/2 nst

S/080/63/036/001/021/026
D204/D307

AUTHORS: Volkhin, V.V., Koblova, A.A. and Ponomarev, Ye. I.

TITLE: Precipitation of rhodium hydroxide from very dilute solutions by freezing

PERIODICAL: Zhurnal prikladnoy khimii, v. 36, no. 1, 1963, 212 - 214

TEXT: The present work was aimed at the precipitation of Rh hydroxide from colloidal solutions (10^{-4} - 10^{-5} moles Rh per 1), since after dissolving it in H_2SO_4 of correct concentration a solution is obtained which is suitable for galvanic Rh plating. Rh sulfate solutions (0.1200 g/l) were diluted to the required concentration, the pH was adjusted to 7-9, and 20 ml samples were taken. One half was then frozen to -2 — -5°C, whilst the other half was allowed to stand for 12 hrs. The frozen samples were thawed out and were left for 5-6 hrs. It was found that freezing led to 90-97 % precipitation (particularly or 1 x 10^{-4} - 5 x 10^{-5}

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Precipitation of ...

moles Rh/1), i.e. 10-15 times greater than in solutions allowed to stand at room temperatures. The effect of freezing was less pronounced for Rh concentrations below 5×10^{-5} moles /l, but was practically unaffected by the presence of Na_2SO_4 or K_2SO_4 (up to 0.1 moles/l). The resulting precipitate was relatively coarse and settled readily. The process is recommended for the removal of traces of Rh from spent electrolytes during regeneration. There is 1 table.

SUBMITTED: December 1, 1961

Card 2/2

VOL'KHIN, V.V.; PONOMAREV, Ye.I.

Effect of freezing on the properties of metal hydroxide coagulates. Report No.5: Mechanism of the process. Koll. zhur. 27 no.1:14-18 Ja-F '65. (MIRA 18:3)

1. Permskiy politekhnicheskiy institut.

PONOMAREVA, Ye.I.; SVIRCHEVSKAYA, Ye.G.; SAUBENOVA, I.G.; TSEFT, A.L.

Interaction of zinc sulfide with sodium plumbite. Trudy Inst. met. obog. AN Kazakh. SSR 6:30-33 '63. (MIRA 16:10)

AL'TER, L.B., doktor ekon. nauk; BLYUMIN, I.G., doktor ekon. nauk [deceased]; KARATAYEV, N.K., prof.; REUEL', A.L., doktor ekon. nauk; STEPANOV, I.G., doktor ekon. nauk; SHTEYN, V.M., doktor ekon. nauk; POLYANSKIY, F.Ya., doktorist. nauk; BOBKOV, K.I., kand. ekon. nauk; VASILEVSKIY, Ye.G., kand. ekon. nauk; MOROZOV, F.M., kand. ekon. nauk; PONOMAREV, Ye.I., kand. ekon. nauk; RYNDINA, M.N., kand. ekon. nauk; FIRSOVA, S.M., kand. ekon. nauk; TSAGA, V.F., kand. ekon. nauk; ZHUK, I., red.; VOSKRESENSKAYA, T., red.; NEZNANOV, V., red.; ULANOVA, L., tekhn. red.

[History of economic theories] Istoriia ekonomicheskikh uchenii. Moskva, Sotsekgiz, 1963. 549 p. (MIRA 17:2)

1. Akademiya nauk SSSR. Institut ekonomiki.

VOL'KHIN, V.V.; KOBLOVA, A.A.; PONOMAREV, Ye.I.

Deposition of rhodium hydroxide from highly diluted solutions by freezing them. Zhur.prikl.khim. 36 no.1:212-214 Ja '63. (MIRA 16:5)

(Rhodium oxide)

VOL'KHIN, V.V.; PONOMAREV, Yu.I.; ZOLOTAVIN, V.L.

Effect of the method of granulating on the sorptive properties of hydrated metal oxides. Izv. AN SSSR. Neorg. mat. 1 no.9: 1573-1576 S '65. (MIRA 18:11)

1. Permskiy politekhnicheskiy institut.

PONOMAREV, Ye. M.

Adopting the "Tula" unit at a Donets Basin mine. Ugol' Ukr. 10 no. 1:33-36 Ja '66. (MIRA 18:12)

1. Nachal'nik uchastka shakhty No.40 "Kurakhovka" tresta Selidovugol'.

POMOMAREV, Ye. M., gornyy inzh.; PERSKIS, G. S., gornyy inzh.;
FROLOV, N. A., gornyy inzh.

Creative link between science and industry. Ugol' Ukr. 7 no.4:
46 Ap '63. (MIRA 16:4)

(Coal mines and mining)

PONOMAREV, Ye.M.

Words of mechanizers do not disagree with their deeds.
Transp. stroi. 11 no.7:4-5 Jl '61. (MIRA 14:7)

1. Glavnyy tekhnolog tresta Yugstroymekhanizatsiya.
(Kiev Hydroelectric Power Station region--Road construction)

OYKS, G.N.; MATEVOSYAN, P.A.; ANSHELES, I.I.; FATKULLIN, O.Kh.; SELIVANOV, V.M.; SHURYGIN, G.D.: SIVKOV, S.S.; FEDAN, A.T.; Prinimali uchastiye: PETROV, B.S.; KUL'KOVA, M.N.; PONOMAREV, Ye.N.; PONOMAREVA, Yu.I.; ZIMINA, R.M.; FEDOROV, V.I.; BELYAKOVA, K.V.

Results of vacuuming ball-bearing steel by various methods. Stal' 24 no.9:805-808 S '64. (MIRA 17:10)

KUTS, Mikhail Konstantinovich; PONOMAREV, Yuriy Timofeyevich; RAUD, V.M., kand. ekonom. nauk, nauchnyy red.; UDAL'TSOV, O.A., red. izd-va; GURDZHIYEVA, A.M., tekhn. red.

[Main sources of the increase of labor productivity in U.S.S.R. industry] Osnovnye istochniki rosta proizvoditel'nosti truda v promyshlennosti SSSR. Leningrad, Ob-vo po raspr. polit. i nauchn. znanii RSFSR, 1961. 53 p. (MIRA 15:2)
(Labor productivity)

PONOMAREV, Ye.V.

Mitral commissurotomy in cardiac arrest. Eksp. khir. i anest. 7 no.6:17-19 N-D '62. (MIRA 17:10)

1. Iz kliniki fakul'tetskoy khirurgii (zav. - prof. S.L. Libov) Kuybyshevskogo meditsinskogo instituta.

PONOMAREV, Ye. V.

Thromboembolism after mitral commissurotomy. Grud. khir. no.4:10-13 '61. (MIRA 14:12)

1. Iz kliniki fakul'tetskoy khirurgii Kuybyshevskogo meditsinskogo instituta (zav. - prof. S. L. Libov)

(MITRAL VALVE--SURGERY) (THROMBOSIS)

PONOMAREV, Ye.V. (Kuybyshev (obl.), ul. Frunze, d.175, kv.1)

Complicated forms of mitral stenosis. Grud. khir. 6 no.5:30-33 S-O '64. (MIRA 18:4)

1. Klinika fakul'tetskoy khirurgii (zav. - doktor med. nauk G.L.Ratner) Kuybyshevskogo meditsinskogo instituta.

PONOMAREV, Ye.V.; RAMM, N.S.

Determining the elements of relative orientation for aerial photographs. Geod.i kart. no.5:26-28 My '61. (MIRA 14:6)
(Aerial photogrammetry)

SHUL'TS, Sergey Sergeyevich, doktor geol.-miner. nauk; MOZHAYEV, Boris Nikolayevich; MOZHAYEVA, Valentina Grigor'yevna; RUKOYATKIN, Anatoliy Arkad'yevich; DOLIVO-DOBROVOL'SKIY, Anatoliy Vasil'yevich; PALITSYN, Nikolay Dmitriyevich; PONOMAREV, Yevgeniy Vasil'yevich; SHENGER, I.A., red. izd-va; ZAMARAYEVA, R.A., tekhn. red.

[Sudoma Upland; geological and geomorphological outline] Sudomskaia vozvyshennost'; geologo-geomorfologicheskii ocherk. [By] S.S.Shul'ts.i dr. Moskva, Izd-vo AN SSSR, 1963. 118 p. (MIRA 16:10)
[5 fold. diagrs.]
(Sudoma Upland--Geology)

PONOMAREV, Ye.V.

Apropos of L.D.Krymskii's article, "Anatomical and clinical features specific to the course of mitral stnosis of rhematic etiology in the surgical cardiological clinic." Grud.khir. no.4: 125-126 Jl-Ag '62. (MIRA 15:10)

(RHEUMATIC HEART DISEASE)
(MITRAL VALVE -- DISEASES)
(KRYMSKII,L.D.)

PONOMAREV, Ye. V.; IVANOVA, V. D.; RUSAKOV, V. M.

Mitral defect of brucellar etiology. Grud. khir. no.5:103-105 '61. (MIRA 15:2)

1. Iz kliniki fakul'tetskoy khirurgii (zav. - prof. S. L. Libov) i kafedry patologicheskoy anatomii (zav. - prof. N. F. Shlyapnikov) Kuybyshevskogo meditsinskogo instituta (rektor D. A. Voronov)

(BRUCELLOSIS) (MITRAL VALVE—DISEASES)

Ponomarev, Ye. V.

PHASE I BOOK EXPLOITATION SOV/4315
SOV/7-3-9

Akademiya nauk SSSR. Laboratoriya aerometodov

Trudy, tom 9 (Transactions of the Laboratory of Aerial Methods, USSR Academy of Sciences, vol. 9) Moscow, AN SSSR, 1960. 357 p. Errata slip inserted. 1,700 copies printed.

Resp. Ed.: V.V. Sharkov, Candidate of Geography; Ed. of Publishing House: D.M. Kudritskiy; Tech. Ed.: M.Ye. Zendel'.

PURPOSE: This volume is intended for geographers, geologists, geodesists, and photogrammetrists.

COVERAGE: This collection of 25 articles contains studies of the earth's surface, structure, and geological formations by means of aerial photography. The authors discuss the principles, methods and techniques used in aerial surveying to determine such factors as the petrographic composition of the soil through the measurement of the spectral brightness of surfaces, the geological structure of underwater areas through recorded photographic images, the geological composition and geomorphological structure of underlying layers through the analysis of surface plant coverings, the trends and characteristics of recent tectonic movements through the study of surface features traced photographically

Brief Communications

AVAILABLE: Library of Congress

(4)

Ponomarev, Ye. V.

PONOMAREV, Ye.V.

Ligature of the ductus arteriosus in coarctationof the aorta. Khirurgiia 33 no.11:114-116 N '57. (MIRA 11:2)

1. Iz kliniki fakul'tetskoy khirurgii Kuybyshevskogo meditsinskogo instituta (zav. kafedroy - prof. S.L.Libov)

(COARCTATION OF AORTA, surg.
ligation of ductus arteriosus (Rus))

POMOMAREV, Ye.V. (Kuybyshev, ul. Frunze, d.175, kv.1); NEKLYUDOV, R.Ye.

Disturbances in heart action following chest surgery. Nov.khir.arkh. no.6:49-53 N-D '59. (MIRA 13:4)

1. Kafedra fakul'tetskoy khirurgii (zaveduyushchiy - prof. S.L. Libov) Kuybyshevskogo meditsinskogo instituta.
(CHEST--SURGERY) (HEART)

FEFILOV, S., general-leytenant; POMOMAREV, Yu., polkovnik

Tactical training of rear units. Tyl i snab. Sov. Voor. Sil 21 no.4:23-26 Ap '61. (MIRA 14:7)
(Military maneuvers)

PONOMAREV, IU. B., N. A. ROGOVIN and P. A. PETROV

Kotel Ramzina 200/35-2; proektirovanie, izgotovlenie, montazh. S.predisl. L. K. Ramzina. Moskva, Gosenergoizdat, 1946. 98 p. diagrs.

200/35-2 Ramzin boiler; designing, manufacturing, assembling.

DLC: TJ315.R3P4

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

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S/126/60/010/003/004/009/XX
E192/E382

3.9100

AUTHORS: Drozhzhina, V.I., Zatsepin, N.N., Ponomarev, Yu.F., Fridman, L.A., Shturkin, D.A. and Yanus, R.I.

TITLE: Theory of Ferroprobes with Longitudinal Symmetrical Saturation Excitation

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol. 10, No. 3, pp. 359 - 366

TEXT: Aschenbrenner and Goubau (Ref. 1) described in 1936 a new highly sensitive method of measuring the potential of the magnetic field by means of nonlinear magnetic elements, ferroprobes, and they used these for measuring the fluctuations of the magnetic field of the Earth. The theory of such probes was developed more thoroughly in subsequent work of German and Soviet authors (Refs. 2-11), including the authors of this paper, for the case of a uniform DC field. Mikhaylovskiy and Spektor (Ref. 12) dealt with the operation of these probes in a nonuniform field. Considerable progress has been made in the techniques of applying them and as a result of this, highly sensitive magnetometers with very fast response are

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Theory of Ferroprobes with Longitudinal Symmetrical Saturation Excitation

available, for instance - for investigating the short-period variations of the magnetic field of the Earth, for searching for mineral deposits by means of aeromagnetic prospecting methods, etc. Furthermore, small-size instruments for measuring local values and gradients of highly nonuniform fields (magnetic flaw detectors for detecting invisible cracks in ferromagnetics), an automatic apparatus for various magnetic measurements, etc. have also been built. In spite of that, a large portion of the practically important problems has to be solved by means of inefficient purely empirical approach, since the theory of these probes is either insufficiently accurate or insufficiently general. In this paper the following problems are formulated and partly solved: 1) taking into consideration more accurately the field of magnetic charges of the core and the eddy-current field in it; 2) taking into consideration more accurately the possible nonuniformity of the

Theory of Ferroprobes with Longitudinal Symmetrical Saturation Excitation

measured field; 3) taking into consideration the influence of the deformation in the initial sections of the hysteresis loop caused by the effect of the measured field. The calculations are made on the basis of the following limitations and assumptions: a) the field to be measured is much smaller than the maxima of the excitation field; b) the influence of magnetic viscosity and after-effects is disregarded; c) the no-load condition is investigated.
It is assumed that the core of the ferro-element is in the form of a solid of revolution and that its axis is taken as the axis OX ; a certain point 0 on this axis is taken as the origin of the coordinates. The distance between an arbitrary point and the axis revolution is denoted as r and the radius of the lateral surface of the core on its cross-section by a coordinate x is denoted as $r_0(x)$. The core carries an excitation winding supplied with a current i_b ,

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which changes with time t between two limit values I_{e1}, the changes being monotonic and symmetrical, i.e. $i_B(t) = -i_B(t + T/2)$, where T is the period of the excitation current. The current produces an excitation field $H_B(x, t)$. The portion of the core between $x = a$ and $x = b$ is surrounded by a search winding which has $n_u(x)$ turns per unit length; the output terminals of this winding are connected to a very large resistance so that it can be assumed that the current in this winding is very small (open-circuit operation). The core is situated in the measured field $H_n(x)$. The field of eddy currents induced in the core is $H_\Phi(r, x, t)$ and the field of magnetic charges in the core is $H_\sigma(x, t)$. The core is assumed to be so thin that

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Theory of Ferroprobes with Longitudinal Symmetrical Saturation Excitation

the nonhomogeneities of the fields H_ϕ, H_n, and H_0 in the transverse direction can be neglected. The vector of the magnetic induction is B and the total magnetic field is $H = H_\phi + H_n + H_\phi + H_0$. The electromotive force induced in the search winding is given by:

$$e = -2\pi \int_a^b n_u dx \int_0^r \frac{dB}{dt} r dr \qquad (1) .$$

From Eq. (1) it follows that:

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Theory of Ferroprobes with Longitudinal Symmetrical Saturation Excitation

$$\varepsilon = e - e^{o} = -2\pi \int_{a}^{b} n_u \, dx \int_{0}^{r_o} \frac{d(B - B^{o})}{dt} \, r dr \qquad (2) .$$

Eq. (2) can be written in a different form by taking into account the following property of the magnetisation curves of ferromagnetics. It is known from experiments (Refs. 13, 14) that if H varies monotonically between two limiting values H_A and H_B, which fulfil the inequalities:

$$H_A < -H_K; \quad H_B > H_K \qquad (3) ,$$

the terminal portions of the ascending and descending branches of the magnetisation loop follow the branches of the limiting magnetisation loop; H_K in Eqs. (3) is a constant of the

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material which is slightly higher than its coercive force. The situation is illustrated in Fig. 1. Consequently, the loops B(H) can be uniquely determined by H_A and H_B. The magnetic inductance for the ascending and descending loops can be expressed by means of the Taylor series. If H_n is comparatively small, it is sufficient to consider only the first-order terms of these series. Consequently, the difference in the magnetic induction can be expressed by:

$$B - B^o = \mu_n^o(H_A - H_A^o) + \mu_\partial^o (H - H^o) \qquad (7)$$

where $\mu_\partial^o = \left(\frac{\partial B^o}{\partial H^o}\right)_{H=H^o}$ is the differential permeability

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at $H = H^0$ and $\mu_n^0 = \left(\frac{\partial B}{\partial H_A}\right)_{H=H^0}$.

It is now necessary to express the variables of Eq. (7) in terms of H_n . This problem can be solved accurately only for the case when H_θ and H_n are homogeneous over the whole volume of the core and the core is in the form of an ellipsoid whose thickness is so small that $H_\Phi = 0$. In this case, Eq. (7) can be written as:

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$$B - B^{o} = \frac{4\pi H_{n}\left[(4\pi - N)(\mu_{\partial}^{o} - \mu_{n}^{o}) + \mu_{\partial}^{o}\mu_{\partial AK}^{o}N\right]}{(4\pi - N + \mu_{\partial}^{o}N)(4\pi - N + \mu_{\partial AK}^{o}N)} \qquad (11)$$

where N is the demagnetisation coefficient of the core and $\mu_{\partial AK}^{o}$ is defined by:

$$B_{A} - B_{A}^{o} = \mu_{\partial AK}^{o}\ (H_{A} - H_{A}^{o}) \qquad (10)\ .$$

Eq. (2) can now be written as:

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$$\varepsilon = AH_n f(t); \quad A = 4\pi^2 \int_a^b n_u(x) r_o^2(x) dx \qquad (12) .$$

In the general case it is necessary to consider three additional equations apart from Eq. (7). These equations (including Eq. 7) are linear and homogeneous with respect to all the unknowns and the parameters H_n. It follows, therefore, that in those cases when the fields H_n are geometrically similar, i.e. if they can be defined by:

$$H_n = K_n h_n(x) \qquad (16)$$

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where K_n is a coefficient independent of x_1; $\varepsilon(t)$ will be of the same form and the scales of measurement will be determined by K_n. In those cases when not only the scale but also the form of $\varepsilon(t)$ is varying, the quantitative comparison of various $H_n(x)$ can be determined from $\varepsilon(t)$ only under certain limiting conditions.
There are 2 figures and 17 references: 13 Soviet and 4 non-Soviet.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals of the AS, USSR)

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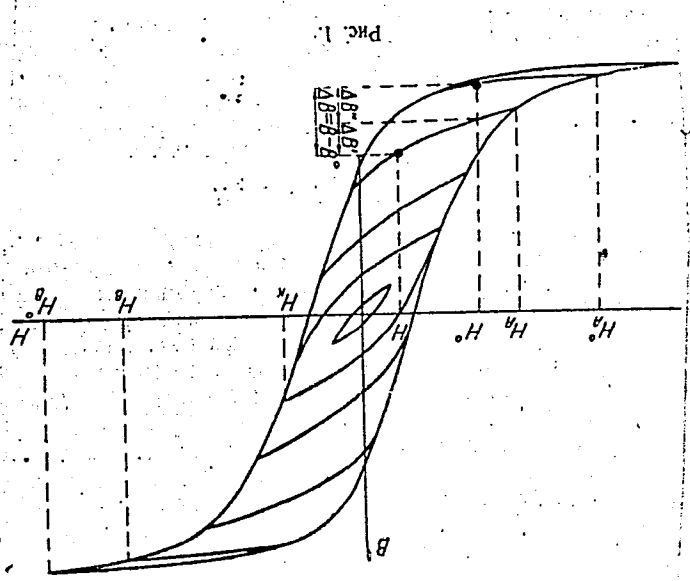

Card 12/12

SUBMITTED: June 12, 1960

PONOMAREV, Yu.F.

Ferroprobes with longitudional excitation in small variable fields. Geofiz. prib. no.10:54-68 '61. (MIRA 15:8)
(Magnetic prospecting--Electronic equipment)

PONOMAREV, Yu.F.

Theory of even harmonic type magnetic amplifiers. Part 2: Amplifiers with longitudinal excitation. Fiz. met. i metalloved. 13 no.6:850-859 Je '62. (MIRA 15:7)

1. Institut fiziki metallov AN SSSR.
(Magnetic amplifiers)

PONOMAREV, Yu.F.

Theory of magnetic amplifiers of the even harmonics type in conditions of loading. Fiz. met. i metalloved. 12 no.2: 300-302 Ag '61. (MIRA 14:9)

1. Institut fiziki metallov AN SSSR.
(Magnetic amplifiers)

PONOMAREV, Yu.F.

Theory of magnetic modulators of the even harmonic type. Part 1: Modulators with transverse excitation. Fiz. met. i metalloved. 12 no.5:660-669 N '61. (MIRA 14:12)

1. Institut fiziki metallov AN SSSR.
(Modulation(Electronics))
(Ferromagnetism)

PONOMAREV, Yu.F. (Sverdlovsk)

Contribution to the theory of magnetic modulators in load operation. Avtom. i telem. 24 no.11:1539-1550 N '63. (MIRA 16:12)

YAKUBOVICH, I.A.; PASKHIN, N.P.; VILYANSKIY, M.P.; BABIN, S.Ye.; SLAVUTSKAYA, N.I.; Prinimali uchastiye: PARADNYA, P.I.; RUPNEVSKAYA, M.L.; PURISMAN, V.I.; LEONOVA, L.P.; PACHKOV, A.S.; BACHURINA, K.M.; FEDIN, M.I.; YUKSINA, L.A.; PONOMAREV, Yu.F.; DYMOVICH, Ye.I.; PIKUSOVA, R.A.

Production and use of synthetic water-soluble polyacrylamide adhesives. Ferm. i spirt.prom. 30 no.8:32-34 '64.
(MIRA 18:1)

1. Moskovskiy likero-vodochnyy zavod.

S/126/62/013/006/004/018
E140/E435

AUTHOR: Ponomarev, Yu. F.

TITLE: On the theory of even-harmonic magnetic modulators Part II. Modulators with longitudinal excitation

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.6, 1962, 850-859

TEXT: This is a continuation of a previous article by the present author (FMM, v.12, 1961, 660) in which transverse excitation was considered. As in the previous article, the applications considered involve amplifiers, field meters and gradient meters. For use in 500 cps amplifier design, the average characteristics of the Soviet permalloy ЭЗ79АМ (E79AM) were taken under various conditions. The so-called longitudinal dynamic permeability is obtained in the form of a Fourier series into which certain coefficients are to be substituted. As in Part I, three methods for determining these coefficients are indicated: experimental, analytical and graphical.
There are 5 figures.

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E140/E435

On the theory of even-harmonic ...

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: October 23, 1961

Card 2/2

ACC NR: AR6027567 SOURCE CODE: UR/0272/66/000/C05/0175/0175

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B

AUTHOR: Shturkin, D. A.; Frantsevich, V. M.; Ponomarev, Yu. F.

TITLE: Electronic circuit of an automatic ferroprobe flaw detector with increased stability

14

SOURCE: Ref. zh. Metrologiya i izmeritel'naya tekhnika, Abs. 5.32.1274

REF SOURCE: (Tr.) In-ta fiz. metallov. AN SSSR, vyp. 24, 1965, 128-130

TOPIC TAGS: flaw detection, flaw detector, ferroprobe flaw detector, automatic flaw detector, electronic circuit

ABSTRACT: The electronic circuit of a ferroprobe flaw detector with increased stability in automatic control of parts is described. The flaw detector was used for automatic control of steel rollers in bearings. Roller flaws were detected using a sensitive ferroprobe which is a gradient meter responding to the local fields of the defects in rollers with remanent magnetization. Orig. art. has: 1 figure and a bibliography of two reference items. [Translation of abstract] [P. Agaletskiy] [FM]

SUB CODE: 09/

Card 1/1 UDC: 621.317.44:620.179

DROZHZHINA, V.I.; ZATSEPIN, N.N.; PONOMAREV, Yu.F.; FRIDMAN, L.A.; SHTURKIN, D.A.; YANUS, R.I.

Theory of magnetometering probes with longitudinal symmetrical saturation activators. Fiz. met. i metalloved. 10 no.3:359-366 S '60. (MIRA 13:10)

1. Institut fiziki metallov AN SSSR.
(Magnetic measurements)

ACC NR: AR6028412 SOURCE CODE: UR/0196/66/000/005/A010/A010

AUTHOR: Ponomarev, Yu. F.

TITLE: Theory of the skin effect in a ferromagnetic plate placed in two superimposed magnetic fields of different frequencies

SOURCE: Ref. zh. Elektrotekhnika i energetika, Abs. 5A51

REF SOURCE: (Tr.) In-ta fiz. metallov. AN SSSR, vyp. 24, 1965, 150-154

TOPIC TAGS: skin effect, ferromagnetic material

ABSTRACT: The equations are set up which are intended for calculating the skin effect in a weak magnetic field of one frequency when a strong magnetic field of another frequency is applied to a ferromagnetic plate. A method is suggested for calculating a weak skin effect in a strong field. It is proven theoretically and experimentally that in such a case, the effect of frequency on the cross-section-average induction-harmonic values does not correspond to the well-known formulas that assume μ = const. Three figures. Bibliography of 8 titles. [Translation of abstract]

SUB CODE: 09 11

Card 1/1 UDC: 538.12:621.3.014.4

PONOMAREV, Yu.I.

Calculation of Coriolis interaction constants. Opt. i spektr. 18 no.1:158-161 Ja '65. (MIRA 18:4)

BOGOSLOVSKIY, P.V., inzh.; PONOMAREV, Yu.I., inzh.; PUKHOV, B.I., inzh.

Low-voltage protective discharger. Energetik 9 no.5:26 My '61. (MIRA 14:5)

(Electric discharges)
(Electric protection)

PONOMAREV, Yu.I., PUKHOV, B.I.

Bakelite low voltage arrester. Mekh. i elek. sots. sel'khoz. 19 no.3:59 '61. (MIRA 14:6)
(Electric protection)

K

COUNTRY : USSR
CATEGORY : Forestry. Biology. Typology.

ABS. JOUR. : RZhBiol., No. 23 1958, No. 104499

AUTHOR : Smirnov, V. N.; Ponomarev, Yu. I.; Smirnova, A. I.
INST. : --
TITLE : The Influence of Cytisus on the Forest Growth Properties of Sandy Podzolic Soils

ORIG. PUB. : Lesn. kh-vo, 1958, No. 3, 81

ABSTRACT : It has been shown by investigations in Mari ASSR that the broom (Cytisus rabus bonensis) by its litter enriches the soil with organic substances, nitrogen and ash elements, affecting positively not only the upper horizon but also deeper layers. Self-sown and plantation pines growing up with broom look healthy and grow and develop better.
--L. V. Nesmelov

Card: 1/1

PONOMAREV Yu. I.

USSR / Soil Science. Biology of Soils. J-3

Abs Jour : Ref. Zhur - Biologiya, No 17, 1958, No. 77397

Author : Vasil'yev, N. D.; Ponomarev, Yu. I.; Mikhaylov, I. I.
Inst : Povolzhskiy Forest Technical Institute
Title : Observations of the Daily Dynamics of the Biological Activity of Soils in Conditions of Dry Pine Forest and Mixed Fir

Orig Pub : Sb. stud. rabot Povolzhsk. lesotekhn. in-t, 1956, vyp. 3, 92-94

Abstract : The biological activity of turf-podzolic soils was characterized by a daily dynamic of CO_2 separation by the soil. Determinations were according to the V. I. Shatnov method (Report VASKhNIL [All-Union Academy of Agricultural Sciences imeni V. I. Lenin], 1952, issue 6). Experiments were conducted in the autumn of 1953 in mossy pine forest, pine forest-red bilberry bush, mixed fir, on a glade with

Card 1/2

PONOMAREV, Yu.I., inzh.

Concerning G.S. Slutskii's article "Equipment for locating cable damages." Elek. sta. 33 no.5:93 My '62. (MIRA 15:7)
(Electric cables—Testing)
(Electric measurements)

POZIN, M.Ye.; ZUBOV, V.V.; TERESHCHENKO, L.Ya.; TARAT, E.Ya.; PONOMAREV, Yu.L.

Solubility of nitric oxide in aqueous solutions of some salts. Izv. vys.ucheb.zav.;khim.i khim.tekh. 6 no.4:608-616 '63. (MIRA 17:2)

1. Leningradskiy tekhnologicheskiy institut im. Lensoveta. Kafedra tekhnologii neorganicheskikh veshchestv.

PONOMAREV, Yu.M.

130-9-19/21

AUTHORS: Shandrenko, G.I. and Ponomarev, Yu.M.

TITLE: Standardization of Parts made of Type Г13Л Steels. (Unifikatsiya detaley iz stali Г13Л)

PERIODICAL: Metallurg, 1957, Nr 9, pp.37-39 (USSR)

ABSTRACT: Type Г13Л manganese steel is used for casting part of equipment for impact-abrasive service conditions, e.g., ore chutes. The steel is difficult to machine and the authors indicate the advantages of standardisation, giving as examples the existing ore-chute armouring at the "Azovstal'" works (27 types of plate) and one made up of only five types, with possible further reduction. As a further example, the existing and suggested construction of the blast-furnace skip at the imeni Voroshilov works are given. There are 4 figures.

ASSOCIATION: VNIIOchermet.

AVAILABLE: Library of Congress.

Card 1/1

PONOMAREV, Yu.T.; TOKAREV, O.Yu.

Changes in the blood coagulation system in rabbits, rats and dogs in sudden death. Biul.eksp.biol.i med. 57 no.5:39-41 My '64. (MIRA 18:2)

1. Kafedra patologicheskiy fiziologii (zav. - prof. I.A.Oyvin) Kubanskogo meditsinskogo instituta, Krasnodar. Submitted July 3, 1962.

PONOMAREV, YU. M.

SHANDRENKO, G.I.; PONOMAREV, Yu.M.

Standardization of G13L steel equipment parts. Metallurg 2 no.9:37-39 S '57. (MIRA 10:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut ogneuporov chermet. (Metallurgical plants--Equipment and supplies) (Steel castings)

POKOMAREVA, Ye.D., dotsent

Problem of acute reticuloerythromyelosis. Terap.arkh. 28 no.5: 66-68 '56. (MLRA 9:10)

1. Iz 4-y kafedry terapii (zav. - chlen-korrespondent AMN SSSR prof. P.I.Yegorov) TSentral'nogo instituta usovershenstvovaniya vrachey (na baze TSentral'noy klinicheskoy bol'nitsy Ministerstva putey soobshcheniya SSSR)

(POLYCYTHEMIA VERA,
etythroemic myelosis (Rus))

Ponomarev, J. K.

USSR/Safety Engineering. Sanitary Engineering..Sanitation. L

Abs Jour: Ref Zhur-Khimiya, No 3, 1957, 10715

Author : Mironov, S. A. and Ponomarev, J. K.
Inst : Not given
Title : Concrete for Radiation Shielding Applications

Orig Pub: Beton i zhelezobeton, 1956, No 7, 259-262

Abstract: The authors discuss briefly the composition and properties of various types of concrete used in radiation shielding applications. Empirical formulas are given for the calculation of the half-thickness for gamma radiation in various concretes as a function of the energy of radiation.

Card 1/1

PONOMAREV, YE. V.

6-12-4/14

AUTHORS: Ramm, N. S., Candidate of Technical Sciences, Ponomarev, Ye., V., Kuzina, A. M.

TITLE: Precise Determination of the Details in the Method of the Non-Distored Model (Utochneniye detaley sposoba neiskazhennoy modeli).

PERIODICAL: Geodeziya i Kartografiya, 1957, Nr 12, pp. 28 - 40 (USSR).

ABSTRACT: The more accurate form obtained in the Laboratory for Aeromethods AN USSR for the method of the model is given here. The investigations referred to the case of a determination of the "banks" (increased height) of many points lying on a stereopair, on a stereocomparator without correcting device. The largest part of the conclusions obtained here also applies to other cases where this method of the non-distorted model is employed. The strict theoretical foundation of this method is only set forth in the doctor's dissertation by G. V. Romanovskiy "Analytical methods for the photogrammetric point-determination" which was hitherto not yet published. Some formulae from this dissertation are given here. Only formulae which are not to be found in any publication and whose derivation was carefully checked by the authors of the present paper are given. At first the linear interpolation of the φ-value is given. Then the orientation of the aerial photographs is investigated on the apparatus and it is shown

Card 1/3

Precise Determination of the Details in the Method of the Non- 6-12-4/14
Distored Model.

that it is more expedient in the first approximation to replace the standard formula :

$\Delta q = \frac{f^2}{1} (\varphi_a - \varphi_b)$ by a more accurate one with whose aid the Δq may at once be obtained. This formula is derived here. Then the influence of the error of orientation is investigated. It is shown that a comparison of the calculations of permissible errors of orientation indicates that in the work according to the method recommended here the demands made on the accuracy of orientation may be reduced by the 3 to 6-fold amount. When the reduction-points are selected in a manner that the parallax of each of them does not too much differ from the parallax of the support lying next, and when the method given here is employed for the construction of the φ-diagrams and those of geodetical orientation, it is possible to restrict oneself to only one orientation considerably more often than it is otherwise customary. In the last chapter the determination of the parallactic coefficient is given. The derivation of the necessary accuracy in determinations of H_o and p is given, as well as recommendations for attaining this accuracy. H_o is the flight

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Card 3/3

RYBAKIN, Sergey Vladimirovich; PONOMAREV, Yuliy Mikhaylovich; KHESIN, Nison Senderovich; NIKOLAYENKO, N.A., otvetstvennyy redaktor; LIBERMAN, S.S., redaktor izdatel'stva; ANDREYEV, S.P., tekhnicheskiy redaktor

[The manufacture of cast iron utensils] Proizvodstvo chugunnoi posudy. Khar'kov, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 158 p. (MLRA 9:11)
(Cast iron) (Kitchen utensils)

PONOMAREV, Yu.P.; DMITRIYEVA, V.N.; BEZUGLYY, V.D.

Determination of N-vinylcarbazole in its polymer. Zhur. anal. khim. 18 no.5:654-656 My'63. (MIRA 17:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut monokristallov, stsintillyatsionnykh materialov i vysokochistykh khimicheskikh veshchestv, Kh[redacted]'kov.

BEZUGLYY, V.D.; PONOMAREV, Yu.P.

Polarographic and acidimetric determination of N-vinylpyrrolidone by a mercury acetate method. Zhur. anal. khim. 20 no. 11:1231-1234 '65 (MIRA 19:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut monokristallov, stsintillyatsionnykh materialov i osobo chistykh khimicheskikh veshchestv, Khar'kov. Submitted June 23, 1964.

BEZUGLYY, V.D.; PONOMAREV, Yu.P.

Polarographic determination of organic compounds being reduced in the far negative region of potentials. Report 1: Polarography of alkyl-substituted styrenes. Zhur. anal. khim. 20 no.7:842-847 '65. (MIRA 18:9)

1. All-Union Scientific-Research Institute of Monocrystals, Scintillating Materials and Specially Pure Chemicals, Kharkov.

BEZUGLYY, V.D.; PONOMAREV, Yu.P.; DMITRIYEVA, V.N.

Separate determination of styrene and α-methylstyrene by the polarographic method. Zhur. anal. khim. 19 no.7:881-889 '64. (MIRA 17:11)

1. All-Union Scientific-Research Institute of Monocrystals, Scintillating Materials and Highly Pure Chemical Substances, Kharkov.

L 10613-63 EPR/EWP(j)/EPF(c)/EWT(m)/BDS ASD Ps-4/Pc-4/Pr-4 RM/WW

ACCESSION NR: AP3001025 S/0075/63/018/005/0654/0656

AUTHOR: Ponomarev, Yu. P.; Dmitryyeva, V. N.; Bezugly*y, V. D. 71

TITLE: Determination of N-vinylcarbazole in its polymers

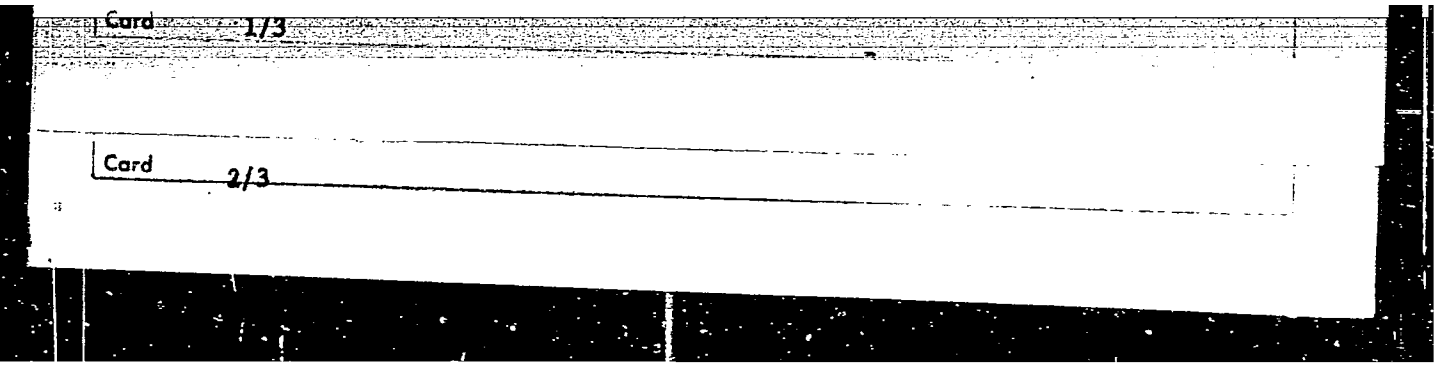
SOURCE: Zhurnal analiticheskoy khimii, v. 18, no. 5, 1963, 654-656

TOPIC TAGS: N-vinylcarbazole, mercuric acetate, methanol, acetic acid, chloroform, dichlorethane

ABSTRACT: The method developed for quantitatively determining N-vinylcarbazole in its polymers or in copolymers with methyl methacrylate comprises of reacting the compound with mercuric acetate in methanol. The liberated acetic acid is titrated with alkali solution with phenolphthalein; the -OCH sub 3 (from methanol) and the -HgOCOCH sub 3 added to the vinyl group in the compound analyzed. Chloroform or dichlorethane may be used as additional solvents

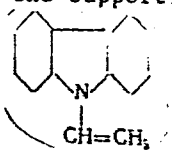
ASSOCIATION: Vsesoyzny*y nauchno-issledovatel'skiy institut monokristallov, stsintillyatsionny*kh materialov i vy*sokochisty*kh khimicheskikh veshchestv, Kharkov (All-Union Scientific research institute for monocrystals, scintillation materials and high-purity chemical substances).

Card 1/2



3

in their polymers with 0.02 N $(CH_3)_4NI$ in 92% CH_3OH as the supporting electrolyte and also to determine separately the residual EAM and N-vinylcarbazole



(B)

in the copolymer. In the later case, the supporting electrolyte used was 0.05 M $(C_2H_5)_4NI$ in dimethylformamide. The polarographic measurements were made with an LR-55A photorecording Heyrovsky-type polarograph

6 tables.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut monokristallov, stsintillyatsionnykh materialov i osobo chistykh khimicheskikh veshchestv, Khar'kov (All-Union Scientific Research Institute of Single Crystals, Scintillation Materials, and High-Purity Chemical Compounds)

L 49025-65

ACCESSION NR: AP5011052

SUBMITTED: 07Mar64 ENCL: 00 SUB CODE: OC, OP

NO REF SOV: 007 OTHER: 005

Card 3/3

L 7769-66 EWT(m)
ACC NR: AP5025919 SOURCE CODE: UR/0205/65/005/005/0681/0684

AUTHOR: Ponomarev, Yu. T.

ORG: Medical Radiology Institute AMN SSSR, Obninsk (Institut meditsinskoy radiologii AMN SSSR)

TITLE: Blood coagulability and fibrinogen qualitative changes in experimental acute radiation sickness

SOURCE: Radiobiologiya, v. 5, no. 5, 1965, 681-684

TOPIC TAGS: experiment animal, irradiation effect, radiation sickness, blood, blood plasma, biochemistry

ABSTRACT: Intermediate products of fibrinogen conversion during acute radiation sickness were studied in experiments staged on dogs and male rats. Eighteen dogs were X-irradiated (RUM-3 unit, 180 kv, 10 ma, 0.5 mm Cu + 1 mm Al filters, 90 cm focal length 4.1 r/min) with an 800 r dose and 80 male rats were gamma-irradiated (GTs-220 unit with a cobalt-60 source, 79 r/sec) with a 600 r dose. Blood specimens for various tests were taken from the femoral veins of dogs before irradiation and 1 to 11 days after; blood specimens were taken from the jugular veins of rats before irradiation and 1 to 15 days after. Indices included blood coagulation time, heparin tolerance of plasma,

UDC: 616.001.28

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L 7769-66
ACC NR: AP5025919

fibrinogen concentration, fibrinolytic activity (euglobulin time), fibrinogen B level, fibrinogen thermostability, and orientation changes of fibrin structures. Results for both dogs and rats indicate that blood coagulability and its fibrinolytic activity change with the development of acute radiation sickness. Blood coagulation time and fibrinolysis increase 24 hrs after irradiation, and 3 days later fibrinolytic activity is high and coagulability is further reduced. On the 6th to 7th day fibrinolytic activity drops below the initial level. By the 9th day blood coagulation time increases by 231% but fibrinolytic activity decreases by only 69%. Heparin tolerance of plasma also changes less markedly than blood coagulation time. With the development of radiation sickness and increased fibrinogen concentration, fibrinogen thermostability becomes more intense. The structure of newly formed fibrin also changes with fibrinogen qualitative changes. A correlation between fibrinogen B level, fibrinogen thermostability and fibrin structure orientation is observed throughout the entire course of radiation sickness. Even as early as 24 hrs after irradiation the fibrin structures are porous in appearance and are shorter and thicker than those in the plasma of control animals. Increased fibrinolytic activity of the blood in the presence of reduced coagulability and fibrinogen qualitative changes may partly explain the appearance of hemorrhages in acute radiation sickness. Orig. art. has: 2 figures and 1 table.

SUB CODE: 06/ SUBM DATE: 220ct64/ ORIG REF: 003/ OTH REF: 012

Card 2/2 nw

PONOMAREV, Yu.T.

Dynamics of the changes in coagulative and fibrinolytic blood systems of dogs with acute radiation sickness. Radiobiologiia 5 no.4:519-521 '65. (MIRA 18:9)

1. Institut meditsinskoy radiologii AMN SSSR, Obninsk.

SKOLICHEV, Ye.P.; POMOMAREV, Yu.P.

Effect of the complex of high-mountain factors on the change in blood serum proteins in x-ray irradiation. Trudy Tadzh. med. inst. 62:129-132 '63. (MIRA 17:12)

1. Tadzhikskiy meditsinskiy institut im. Abuali ibni Sino, Dushanbe.

PONOMAREV, Yu.T.; MUSAKOVA, G.P.

Changes in the protein composition of the blood serum and the process of their renewal in experimental pathology of the liver in high-mountain areas. Trudy Tadzh. med. inst. 62:133-136 '63. (MIRA 17:12)

1. Tadzhikskiy meditsinskiy institut im. Abuali ibni Sino, Dushanbe.

ACCESSION NR: AP3000895 S/0179/63/000/002/0155/0159

AUTHOR: Landa, P. S. (Moscow); Ponomarev, Yu. V. (Moscow)

TITLE: Determining eigenfunctions and eigenvalues

SOURCE: AN SSSR. Izv. Otd. tekh. nauk. Mekhanika i mashinostroyeniye, no. 2, 1963, 155-159

TOPIC TAGS: boundary value problems, electronic simulation

ABSTRACT: A method is presented for the solution of natural-oscillation problems in linear inhomogeneous systems with distributed parameters by using electronic models with d-c amplifiers. As an example, a problem of determining the lowest natural frequencies and nature of flexion-torsion oscillations of a wing in vacuum is studied and solved on an MN-7-type computer. Equations of symmetrical flexion-torsion oscillations of a straight cantilever-type wing with certain boundary conditions are written and analyzed. The method consists in substituting a space coordinate x by time coordinate τ ($x = [1/T]\tau$) and in the selection of unknown initial conditions at one end of the wing in such a manner that the necessary boundary conditions are satisfied at the other end. Both theoretical

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ACCESSION NR: AP300895

and experimental characteristic functions of flexion-torsion oscillations are given in graphs. Oscillograms of natural modes of combined oscillations are presented and discussed. The method described can be applied to the problems of eigenvalues with boundary conditions of a general type and also to the solution of the problem of self-oscillations in distributed systems of the type considered above (e.g., wing flutter problems). Orig. art. has: 13 formulas, 4 figures, and 2 tables.

ASSOCIATION: none

SUBMITTED: 03Jan63 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: AI,MM NO REF SOV: 004 OTHER: 000

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and b) non-first-order bending oscillations of a mass fastened by a cantilever:

$$\frac{d^2}{dx^2}\left(\frac{EI(x)}{(EI)_0}\frac{d^2y}{dx^2}\right) - \frac{m(x)}{m_0}y = 0$$

$$\left[\frac{EI}{(EI)_0}\cdot\frac{d^2y}{dx^2}\right]_{x=0} = 0 \quad \frac{d}{dx}\left(\frac{EI}{(EI)_0}\frac{d^2y}{dx^2}\right)_{x=0} = 0, \quad y(l) = \left(\frac{dy}{dx}\right)_{x=0}$$

ACCESSION NR: AP4040911 S/0109/64/009/006/0975/0982

AUTHOR: Ponomarev, Yu. V.; Ry*lov, V. A.

TITLE: Investigation of phase switching in a parametric oscillator

SOURCE: Radiotekhnika i elektronika, v. 9, no. 6, 1964, 975-982

TOPIC TAGS: oscillator, parametric oscillator, parametron, parametron oscillator phase switching

ABSTRACT: A synchronous exertion of an external force on a nonlinear-reactance-based parametric oscillator is considered. Stationary conditions, transients, and phase switching in a nonautonomous parametric oscillator are theoretically investigated. As an analytical investigation of transients is impractical, the pertinent truncated equations were solved on an MN-7 analog computer. The transients were observed on the Van der Pol variable plane, which permitted an evaluation of the time elements involved. It is found that: (1) Phase switching

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ACCESSION NR: AP4040911

in a parametric oscillator is possible when the external-force amplitude exceeds a certain threshold which depends on the external-force phase and the oscillator parameters; (2) An optimum phase exists at which the switching can be produced by a minimum external-force amplitude; (3) The switching time depends on the amplitude and phase of the external force; (4) With sufficiently high amplitudes, the phase may switch without transition into another zone. "In conclusion, the authors are thankful to V. V. Migulin for his valuable critical comments made during discussion of this work." Orig. art. has: 6 figures and 11 formulas.

ASSOCIATION: none

SUBMITTED: 11Mar63 ENCL: 00

SUB CODE: DP, EC NO REF SOV: 005 OTHER: 001

Card 2/2

L 52581-65 EWT(d) Pg-4 IJP(c)

ACCESSION NR: AP5008317 S/0103/65/026/003/0443/0453

AUTHOR: Ponomarev, Yu. V. (Moscow) Stratonovich, R. L. (Moscow)

TITLE: Solving a diffusion alternative equation by means of total differential equations

SOURCE: Avtomatika i telemekhanika, v. 26, no. 3, 1965, 443-453

TOPIC TAGS: total differential equation, diffusion equation, alternative equation

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ABSTRACT: An approximate method is suggested for solving a diffusion

L 52581-65

ACCESSION NR: AP5008317

By ascribing a small neighborhood to the switching line, thereby dividing the state

KOZHANOV, M.G.; NECHKIN, M.G.; ANTIPIN, V.G.; PONOMAREV, Yu.Yu.

Rapid fritting of new bottoms in large-capacity open hearth furnaces. Metallurg 7 no.9:13-15 S '62. (MIRA 15:9)

1. Magnitogorskiy metallurgicheskiy kombinat.
(Open-hearth furnaces--Maintenance and repair)

S/089/61/011/001/003/010
B102/B214

21.1000

AUTHORS: Ponomarev-Stepnoy, N. N. Glushkov, Ye. S.

TITLE: Some methods of neutron - physical calculations for physical design of power reactors

PERIODICAL: Atomnaya energiya, v. 11, no. 1, 1961, 19 - 25

TEXT: The physical design of a reactor consists in the solution of the following theoretical problem: To arrive a given distribution law for the specific heat loss by spatial arrangement of the materials in the reactor. Some methods are discussed for treating the problem mathematically. There are two cases to be considered depending on the construction of the core: 1) reactors for which the heat-removing surface per unit volume of the core remains constant in the design of the core, and 2) reactors for which the heat-removing surface per unit mass is constant. The first case is treated first. The law of the heat escape distribution (per unit volume of the core) is given. The following calculations are made along general lines: Calculation of a thermal reactor in the age approximation. One obtains

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Some methods of ...

$$\left.\begin{aligned} D\nabla^2 nv - \frac{\partial q}{\partial u} &= -S_0(r)\chi(u); \\ D^m\nabla^2 nv_m - \Sigma_{c0}^m nv_m &= \Sigma_{c5}^m nv_m - q(u_{m-1}); \\ S_0(r) &= \nu_c^m \Sigma_{c5}^m nv_m(r). \end{aligned}\right\} \quad (3)$$

its solution according to Fourier's method gives

$$\varrho_3(r) = \frac{S_0(r)}{\nu_c^m nv_m(r)\,\sigma_{c5}^m},$$

$$nv_m(r) = \sum_{n=1}^{\infty} B_n \psi_n(r);$$

$$B_n = A_n \frac{\left(\int_{-\infty}^{u_{m-1}} \chi(u')\, e^{-\alpha_n^2 \int_{u'}^{u_{m-1}} \frac{D(u'')}{\xi\Sigma_s(u'')}\,du''}\,du' - \frac{1}{\nu_c^m}\right)}{\Sigma_{c0}^m (1+\alpha_n^2 L_0^{m2})}$$

Card 2/7

where α_n^2 indicates the eigenvalues of the problem

$$\nabla^2\psi_n(r) = -\alpha_n^2\psi_n(r);$$
$$\psi_n(R_0) = 0; \qquad (A)$$

A_n are the Fourier coefficients from the equation for the density of fission-neutron sources, namely,

$$S_0(r) = \varrho_0(r)J(r), \qquad (1)$$

$$J(r) = \int_{-\infty}^{u_m} \nu_c\sigma_{c5}(u)\,nv(r, u)\,du + \nu_c^m\sigma_{c5}^m nv_m \qquad (2)$$

$J(\vec{r})$ being the fission integral for a fissile nucleus. The problem (in age approximation) has no analytical solution for a reactor with reflector which differs in its properties from the moderator in the core. Calculation of a thermal reactor in the multigroup approximation. The solution of the matrix equations gives for the desired distribution in the core

$$q_5(r) = \frac{S_0(r)}{\nu_c^m n v_m(r) \nu_{\text{ef}}^m}. \qquad (13)$$

This equation represents the criticality condition for the reactor. Calculation of intermediate reactors. The neutron - physical problem is not analytically solvable in this case; recourse must be had to numerical methods. One possibility, for example, is the method of successive approximations with respect to the concentration of the fissile matter. In zeroth approximation, $q_5^0(\vec{r}) = S_0(\vec{r})/J^0(\vec{r})$, where $J^0(\vec{r})$ is calculated according to formula (2) With this value and the known $S_0(\vec{r})$ one has $q_5^{(1)}(\vec{r}) = S_0(\vec{r})/J^{(1)}(\vec{r})$, and so on, till the ratio $S_0(\vec{r})/J^{(p)}(\vec{r})q_5^{(p-1)}(\vec{r})$ in the pth approximation is a constant quantity. If the distribution law of heat emission is referred to the unit mass of the fissile material, it coincides for the thermal neutrons with the law of thermal neutron flux distribution. The problem of physical design in this case consists in a solution of the reactor equations for a given thermal neutron distribution $nv_m(\vec{r}) \equiv \varphi(r)$ in

Some methods of ...

the core. This system can be solved in the multigroup theory successively in the manner of the diffusion equation, beginning with the thermal group and stopping with the first. The example of a one dimensional reactor with $nv_m = B = \text{const}$ in the core is demonstrated. The equations for the core read

$$\left.\begin{aligned} D^6\nabla^2 nv_6 - \Sigma_a^6 nv_6 + \nu_c^m \Sigma_{c5}^m nv_m = 0; \\ D^m\nabla^2 nv_m - \Sigma_{c0}^m nv_m - \Sigma_{c5}^m nv_m = -\Sigma_a^6 nv_6 \end{aligned}\right\} \quad (14)$$

and for the reflector

$$\left.\begin{aligned} D^{6'}\nabla^2 nv_6' - \Sigma_a^{6'} nv_6' = 0; \\ D^{m'}\nabla^2 nv_m' - \Sigma_{c0}^{m'} nv_m' = -\Sigma_a^{6'} nv_6'. \end{aligned}\right\} \quad (15)$$

With the boundary conditions

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Some methods of ...

$$\left.\begin{aligned} nv_6 &= nv_6'; \\ nv_m &= nv_m'; \\ D^6\nabla_n nv_6 &= D^{6'}\nabla_n nv_6' + \nu_c^6 \Lambda nv_m'; \\ D^m\nabla_n nv_m &= D^{m'}\nabla_n nv_m' - \Lambda nv_m'. \end{aligned}\right\} \quad (16)$$

one obtains as solution for the first system

$$nv_6 = B\frac{\Sigma_{\varepsilon 0}^m}{\Sigma_s^0}[1 + f(r)]; \quad (19)$$

$$nv_m = B.$$

and for the second

$$nv_6' = BA_1'\gamma_1'\psi_1'(r);$$

$$nv_m' = B\{A_1'\psi_1'(r) + A_2'\psi_2'(r)\}. \quad (20)$$

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where $f(\vec{r}) = A_1\psi_1(\vec{r}) + \frac{1}{\frac{m}{\nu_c}-1}\psi(\vec{r})$ is the solution of the equation $\nabla^2\psi = \varkappa^2\psi$,

$\varkappa_1' = \left(1 - \frac{\tau'}{L_0'^2}\right)\frac{\sum_{m'} c_0}{\sum_{3} \sigma'}$. There are 4 figures and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc.

SUBMITTED: July 7, 1960

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26373
S/089/61/011/002/010/015
B102/B201

21.2200

AUTHOR: Ponomarev-Stepnoy, N. N.

TITLE: Fast-neutron flux defining the radiation damage of materials

PERIODICAL: Atomnaya energiya, v. 11, no. 2, 1961, 184-185

TEXT: Reactor materials that contain no fuel are prevalently exposed to fast-neutron irradiation; the action of neutrons differs depending upon the type of material. In metals, the principal effect consists in a displacement of atoms from their normal lattice sites; the amount of displaced atoms depends upon the neutron energy. For displacement studies it is necessary to know neutron flux and energy spectrum. An experimental investigation of the radiation effect upon various materials is generally conducted in such a way that samples of these materials are exposed to irradiation in a reactor. Here, however, conditions always differ from those that would prevail if the same materials were used as building materials. In order to utilize the experimental results so obtained for the designing of reactors, they must be specially processed. Today, when interpreting measurement data, the fast-neutron flux above a given energy value is taken as the quantity

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characterizing the radiation damage; this energy value is, e.g., assumed to be 0.5 Mev. In this process, a considerable part of neutrons, viz., those with energies below the chosen value, is not taken into account; likewise, the energy spectrum of the neutrons that have been taken into account is neglected. Therefore, the data of different studies are hardly comparable and not of much use in reactor designing. It may be assumed with sufficient accuracy that the amount of displaced atoms is proportional to the energy absorbed by the substance. This energy, which is transferred to the substance as the neutrons are slowed down, appears to be the best characteristic of the radiation damage arising in this substance. The total energy (per unit volume) which is thus transferred to the substance, is given by

$$\int_0^t q_v^n dt = \int_0^t dt \cdot \int_{E_d/(1-\alpha)}^{\infty} nv(E,t)\Sigma_s(E)\,\frac{E(1-\alpha)}{2}\,dE \qquad (1).$$

The lower integration limit, $E_d/(1-\alpha)$, was chosen on the strength of the possible atomic displacement; $nv(E,t)$ is the neutron flux in a unit energy interval, $\Sigma_s(E)$ is the macroscopic neutron scattering cross section in the material;

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for heavy nuclei one finds $(1 - \alpha)/2 = \xi$, where ξ denotes the mean logarithmic energy losses for one collision; $\alpha = [(A - 1)/(A + 1)]^2$, where A denotes the atomic weight of the substance. With (1) it is possible to introduce an effective integral fast-neutron flux which best characterizes the radiation damage caused by fast neutrons:

$$\int_0^t nv_{eff}\,dt = \frac{\int_0^t dt \int_{E_d/(1-\alpha)}^{\infty} nv(E,t)\xi\Sigma_s(E)E\,dE}{\int_{E_d/(1-\alpha)}^{\infty} \left[\xi\chi(E) + \frac{1}{E}\int_E^{\infty}\chi(E')dE'\right]\xi\Sigma_s(E)E\,dE} \qquad (2).$$

Here, $\chi(E)$ denotes the spectrum of fission neutrons with the normalization: $\int_0^{\infty}\chi(E)dE = 1$. There are 4 Soviet-bloc references.

SUBMITTED: August 1, 1960

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33471
S/170/62/005/002/003/009
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26.222/

AUTHOR: Ponomarev-Stepnoy, N. N.

TITLE: Profiling of a heat load along a reactor channel with allowance for irregularities in the preheating of the coolant

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v., 5, no. 2, 1962, 42 - 46

TEXT: The temperature of a fuel element at any place of a reactor core is given by $T_{эл} = T_т(z_{вх}) + \int_{z_{вх}}^{z} aI(z)\varrho dz + bI(z)\varrho$, where $T_т$ is the coolant temperature, I(z) is the amount of material per unit volume of core, which is fissioned per unit time, ϱ is the concentration of nuclei of the fissile material in the fuel element; $a = kF_M/Gc_p$, where F_M is the area occupied by the material of the fuel element in the core, G is the coolant yield through the channel, k is a proportionality factor, and z is the longitudinal coordinate of the channel; $b = kF_M R/p_T$ is the heat perimeter of the fuel element, and R is the thermal resistivity between the fuel element and the

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coolant. For the case where the power of a reactor is limited by the maximum permissible temperature of the fuel elements, the condition for the maximum coolant temperature at the channel output at the maximum permissible temperature of the fuel element is given by

$$a_l [\rho l(z)]\, dz + b_l d[\rho l(z)] = 0. \qquad (2.1),$$

with

$$a_l = a\left\{1 + \left[\frac{\delta(\rho l)}{\rho l}\right]_l + \left[\frac{\delta a}{a}\right]_l\right\}, \qquad (2.2)$$

$$b_l = b\left\{1 + \left[\frac{\delta(\rho l)}{\rho l}\right]_M + \left[\frac{\delta b}{b}\right]_M\right\}. \qquad (2.3),$$

where $\left[\delta a/a\right]_l$ is the relative deviation from a, averaged over the length of the channel; $\left[\delta b/b\right]_M$ is the relative local deviation from b, $\left[\delta(\varphi I)/\varphi I\right]_{l,M}$ is the relative deviation from φI. If a_l and b_l are constant along the length of the channel, then the solution is given by

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$$p\,l(z) = \frac{T^m_{эл} - T_т(z_{вх})}{b_l} \exp\left[-\frac{a_l}{b_l}(z - z_{вх})\right]. \qquad (2.4).$$

The average heating of the coolant is given by

$$T_т(z) - T_т(z_{вх}) = \frac{T^m_{эл} - T_т(z_{вх})}{a_l}\, a\left\{1 - \exp\left[-\frac{a_l}{b_l}(z - z_{вх})\right]\right\}. \qquad (2.5),$$

and the wall temperature of a fuel element in the middle of the channel by

$$T_{эл}(z) - T_т(z_{вх}) = [T^m_{эл} - T(z_{вх})]\left\{\frac{a}{a_l} - \left(\frac{a}{a_l} - \frac{b}{b_l}\right)\times \right. \qquad (2.6),$$

$$\left. \times \exp\left[-\frac{a_l}{b_l}(z - z_{вх})\right]\right\}.$$

where $T^m_{эл}$ is the maximum permissible temperature of the fuel elements, and $z_{вх}$ is the input coordinate of the channel. The decrease of irregularities in the heating of the coolant by introducing mixed zones and the

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